Entelligent Case Study: Industrials – Stress-Testing Carbon and Energy Risk in the Real Economy

In a world of fragmented climate and energy policy, reviewing company performance under various energy transition scenarios is more important than ever. As our models indicate, over the next five years, **industrial companies could face billions of dollars in net income reductions and balance sheet adjustments** under a high carbon expense environment.

While worldwide policy tightening may seem unlikely today, various jurisdictions have, or are imminently implementing or contemplating, stricter carbon rules. This unlevel playing field creates challenges for corporates when making strategic plans across markets.

Companies with ambitious Net Zero 2050 targets, robust energy transition objectives, and significant progress to date are likely better placed to withstand energy transition challenges and shocks, given their deeper understanding of their energy use, intensity, and procurement.

Using Entelligent's forward-looking quantitative models we analyzed nine industrial companies to assess potential costs and risks in a high carbon expense world (Net Zero 2050.) All companies in the sample show negative changes in net income and total assets from baseline, but the dispersion of results is significant. Contributing factors include industrial processes and feedstocks, reliance on grid versus owned generation, and available decarbonization pathways.

All companies in the sample reside in the bottom-left quadrant indicating scenario-driven losses in both assets and net income compared to Baseline. Companies to the left of the red line could face greater asset impairment due to stranded asset risk from on-site energy generation that relies on fossil fuels.

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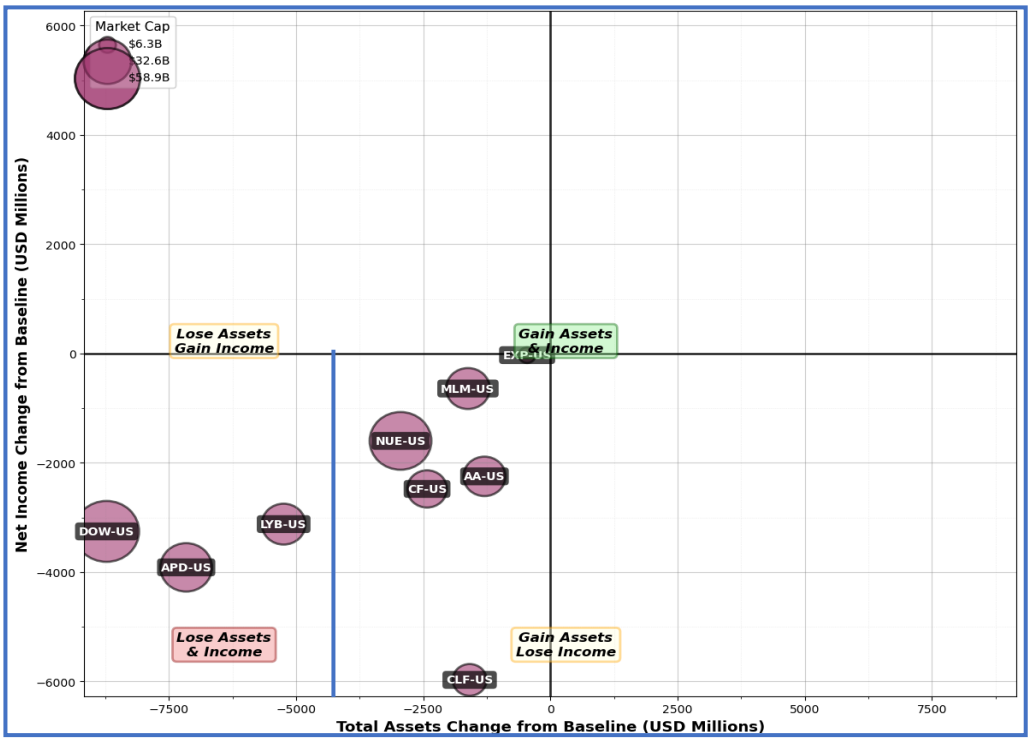
Figure 1: Change in Net Income and Total Assets (from Baseline) - USD Millions - under a Global, High Carbon Expense Environment (NZ 2050)



Bubble size = company market capitalization

X axis = Change in total assets vs. Baseline (right quadrant placement = financial gain; left quadrant = financial loss)

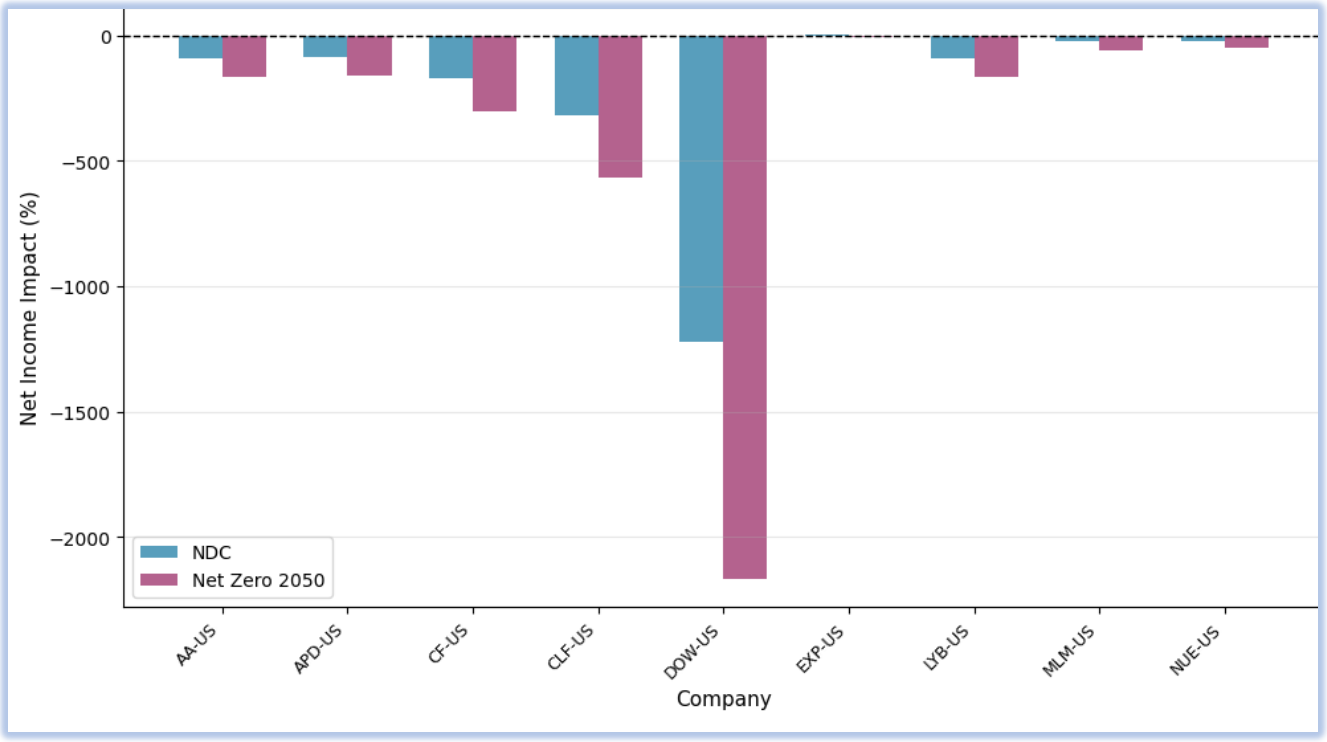
Y axis = Change in net income vs. Baseline (top quadrant placement = financial gain; lower quadrant = financial loss)

Baseline = Also known as "Current Policies" or "Reference" scenario. Refers to the "business-as-usual" trajectory and assumes pro-forma growth assumptions

Nationally Determined Contributions vs. Net Zero 2050

Taking a more granular look, Dow demonstrates the biggest potential risk of negative net income impact under both the Nationally Determined Contributions (NDC) scenario as well as the stricter Net Zero 2050 environment. Dow is reliant on natural gas as its primary fuel source. Many chemical processes are high heat and therefore more difficult to decarbonize than electrified processes. Dow's use of on-site natural gas plants also places it at greater risk of stranded assets (see Figure 3.) Dow also relies on fossil fuels (natural gas liquids) as feedstocks, which would present further risks should input costs significantly rise in the future.

Figure 2: Change in Net Income (%) vs. Baseline (NDC & Net Zero 2050)



This chart compares the percentage change in net income for selected industrial companies under two global energy transition scenarios — Nationally Determined Contributions (NDC) *and* Net Zero 2050. *Each bar represents the modeled deviation from baseline financial performance. The deeper declines under Net Zero 2050 reflect the higher carbon and energy cost environment, revealing how firms with fossil-based processes (e.g., Dow, CF, CLF) face steeper earnings compression, while those with cleaner or more electrified operations (e.g., Nucor, Alcoa) show greater resilience.*

Source: Entelligent Energy and Climate Transition Data.

Eagle Materials (EXP) has the lowest potential overall impact. The majority of its business is cement production for which it established a 2030 CO_2e intensity reduction goal, attaining it ahead of schedule. It has also adopted carbon removal techniques in its concrete business, where captured CO_2 is embedded into products.[1]

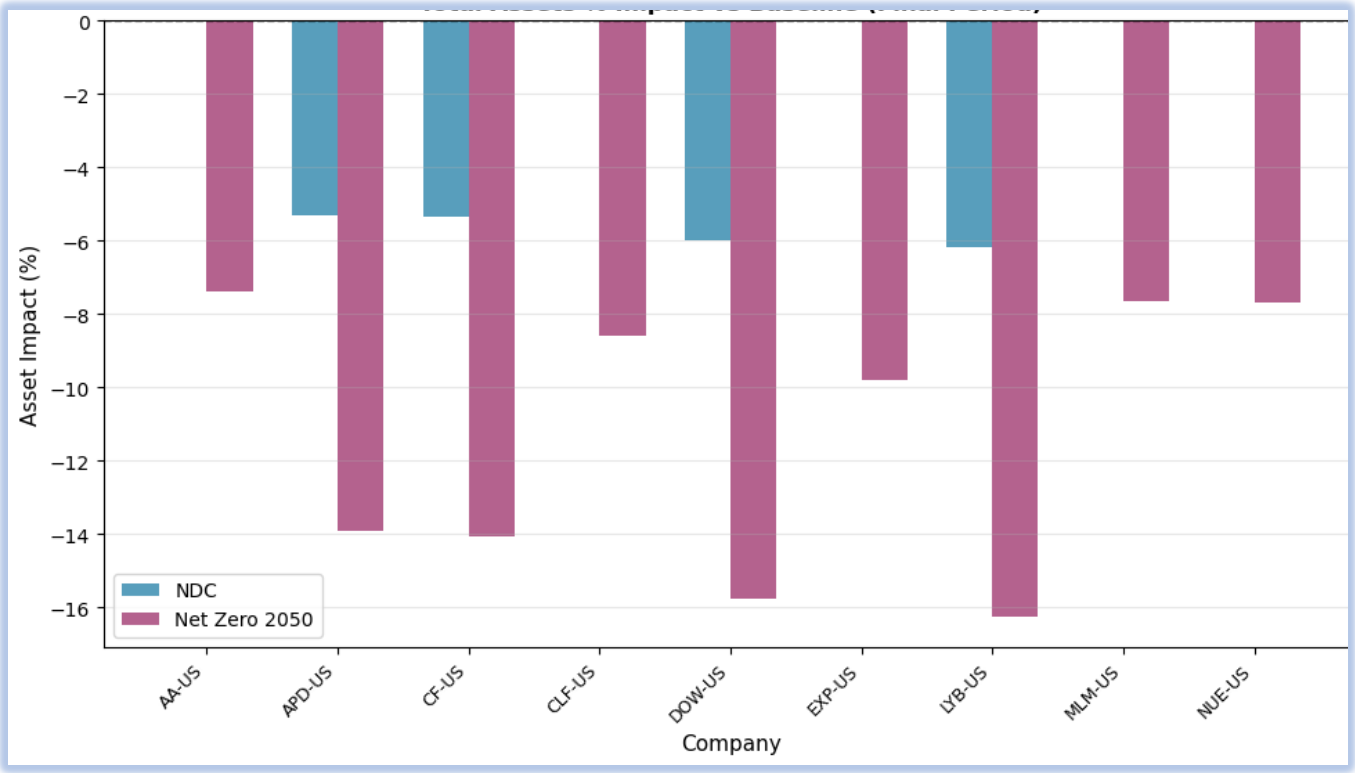
Other companies with lower overall financial risks include Nucor (NUE). In the U.S., steel is mostly produced via electric arc furnaces (EAFs). This, alongside a high recycling rate, means that the U.S. industry has lower overall emissions intensity compared to other countries.[2] However, differences exist between domestic steelmakers: Nucor was the "first diversified steelmaker in the U.S. to set GHG emission reduction targets that include Scopes 1, 2 and 3."[3] It relies on EAFs and has a high degree of

[1] *2024 Sustainability Report, Eagle Materials*
[2] *"World Steel in Figures", 2024, World Steel Association*
[3] *"2024 Corporate Social Responsibility Report", Nucor*

scrap use. Conversely, Cleveland-Cliffs (CLF) demonstrates greater risk under a high carbon expense scenario given the use of blast furnaces for the particular type of steel it produces.

Alcoa, which is focused on aluminum and alumina, also has lower overall net income risk. Its aluminum smelting business is majority renewables-powered and its alumina refining business, while harder to decarbonize, is at "less than half the industry average" for emissions intensity.[4]

Figure 3: Change in Total Assets (%) vs. Baseline (NDC & Net Zero 2050)



This chart shows the percentage change in total asset values for selected industrial companies under two energy transition scenarios — Nationally Determined Contributions (NDC) *and* Net Zero 2050. *The deeper declines under* ***Net Zero 2050****highlight how higher energy costs and stricter transition pathways increase asset-impairment risk, particularly for firms with fossil-based production or on-site generation, while more electrified and efficient firms maintain stronger asset resilience.*

Source: Entelligent Energy and Climate Transition Data.

All companies show significant negative impacts on total assets under the highest carbon expense scenario (Net Zero 2050), but only a few companies see negative impacts under the NDC scenario. Those companies (Dow (DOW), LyondellBasell (LYB), CF Industries (CF), and Air Products & Chemicals (APD)) generally have significant on-site energy generation fueled by fossil fuels and some have high dependence on fossil fuels as feedstocks. Stricter carbon budgets under NZ 2050 could result in all

[4] *"Investor Presentation", September 2025, Alcoa*

companies being subject to negative asset impacts, albeit to different degrees. In addition, even where companies have different internal processes and therefore more opportunities to improve their trajectories, sector share price moves may closely correlate when policies tighten.

However, some of these companies are also important enablers of decarbonization in other sectors, for example via growth in clean hydrogen production. Successful and timely execution against Net Zero 2050 goals, in terms of emissions and low-carbon product expansion, could therefore lead to a greater dispersion of outcomes over time.

The Longer-Term Outlook

While the current energy transition trajectories of the group vary, planned initiatives and CAPEX projects may deliver very different results. Some on-site generation assets connected to harder-to-abate processes may not be candidates for full electrification, but could be otherwise retrofitted, repurposed, or replaced to reduce emissions — for instance by substituting lower-carbon fuels, implementing carbon capture and storage (CCS) technologies, or improving process efficiency. Such measures could enhance future asset valuations, reduce exposure to potential carbon expenses, and strengthen competitive positioning in markets that penalize higher-carbon products.

Given this dynamic landscape, regular reassessment is important. Entelligent's quantitative models uncover risks and opportunities using climate scenarios, energy factors, and company-reported financial data, continually reviewing impacts at the portfolio, sector, and individual entity level. By integrating all sources of energy transition risk, Entelligent provides a more holistic perspective than carbon intensity alone.

About Entelligent

Entelligent's forward looking models connect energy transition scenarios to financial performance—quantifying how emissions, energy prices, and carbon policies could affect profitability, capital needs, and key financial ratios.

We apply machine-learning and statistical analysis to energy and climate scenarios, correlating them to market and fundamental data to generate comparable, predictive, financially material data sets.

Our dynamic, decision-useful outputs are aligned with regulations and standards, enabling investors, lenders, and companies to manage risk, identify opportunity, and report with confidence.

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